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**ISCOM2924GF Hardware Installation
User Manual**



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Address: 2nd Floor, South Building of Rainbow Plaza, No.11 Shangdi Information Road,
Haidian District, Beijing 100085

Tel: +86-10-82883305

Fax: +86-10-82883056

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If you have comments on the ISCOM2924GF specification, instead of the web page above, please send comments to:

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We hope to hear from you!

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Preface

About This Manual

This manual is for users of ISCOM2924GF switch with hardware version higher than VER. A.00.

Who Should Read This Manual

This manual is a reference for device installation and maintenance staff.

Relevant Manuals

《ISCOM2924GF Series Switches Commands Notebook》

《ISCOM2924GF Series Switches Configuration Guide》

Organization

Chapter 1: Overview

This chapter introduces the content of the manual and other relevant reference documents and explains relevant term definitions.

Chapter 2: Specifications and Dimension

This chapter is an instruction of the device specifications, device dimension and device operating environment.

Chapter 3: Device Appearance

This chapter describes the panel of the device and the definition of the indicators on the device panel.

Chapter 4: Installation and Application

This chapter introduces the cables and sub cards that may be applied during the installation process.

Chapter 5: Notes

This chapter explains other detailed requirements that must be satisfied during the installation.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols

 <i>Warning</i>	This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.
---	--

	Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.
---	---

	Protective earth: the marked lug or terminal should be connected to the building protective earth bus.
--	--

 <i>Warning</i>	<p>Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.</p> <p>Please observe the following precautions:</p> <ul style="list-style-type: none">• Before turning on the chassis with optic module, make sure that the fiber optic cable is intact and is connected to the transmitter.• Do not attempt to adjust the laser drive current. <ul style="list-style-type: none">• Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.• The use of optical devices with the equipment will increase eye hazard.• Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure. <p>ATTENTION: The laser beam may be invisible!</p>
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Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

All extension slots are not hot-swappable

Before operating modules in the electricity conditions, please be noticed that optical modules shall be connected with optical fiber wires or shield with optical module cover for fear that laser light harms to operator's eyes.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may

be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connection of AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

Connection of DC Mains

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC mains systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC supply is electrically isolated from any AC source and that the installation complies with the local codes.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position.

When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

Preventing Electrostatic Discharge Damage

Modules which can be plugged into chassis are sensitive to damage from static electricity. Conversely, static voltages as high as 35,000V can be generated just by handling plastic or foam packing material, or by sliding assemblies across plastic and carpets. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, observe the following guidelines:

- Always use an ESD-preventive antistatic wrist strap or ankle strap and ensure that it makes good skin contact.
- When removing or installing a component, make sure the equipment end of your antistatic strap leash is connected to the ESD connection sockets on the front of the chassis or to a bare metal surface on the chassis. Avoid contact between the component and your clothing. The wrist strap only protects the component from ESD voltages on the body; ESD voltages on your clothing can still cause component damage.
- Always place a card component-side-up on an antistatic surface, in an antistatic card rack, or in a static shielding bag. If you are returning the item to the factory, immediately place it in a static shielding bag.
- Handle Modules by the metal card carrier edges only; Avoid touching the board or any connector pins.

Chapter 1 Overview

1.1 Overview of this manual

This manual mainly discusses the installation of ISCOM2924GF switch. It describes the features of the switch, introduces its components and the functions these components accomplish. The manual brings forth a normative installation procedure for users and explains the types and specifications of all cables applied during the installation.

This manual focuses on the hardware installation and employment of ISCOM2924GF switch. For the configuration and operations of the switch based on software, please refer to the corresponding software configuration guide.

1.2 Terms explanation

10BASE-T	A term in IEEE 802.3 for Ethernet over CAT-3 or better twisted pair, based on Manchester coding and running at 10Mbps.
100BASE-TX	A term in IEEE 802.3 for Fast Ethernet over CAT-5 twisted pair, based on 4B/5B coding and running at 100Mbps.
1000BASE-X	A term in IEEE 802.3 for Gigabit Ethernet over fiber, based on 8B/10B coding and running at 1000Mbps.
Auto Negotiation	The auto negotiation procedure is: the port at one site adapts its bit rate and duplex mode to the highest level it and the opposite site device both support according to the bit rate and duplex mode adopted by the remote site device, that is, the connected devices on both site adopt the fastest transmission mode they both support after the auto negotiation process.
Full Duplex	A communication pattern that allows communication in both directions simultaneously.
Half Duplex	A communication pattern that allows communication in both directions, but only one direction at one time.
RJ-45	The 8 position modular connector applied in twisted pair cable link
MDI	Medium Dependent Interface, the name for the connector physically and electrically connects the media converter and the media segment.
MDIX	Medium Dependent Interface Crossover, it sends the transmitting signal of a device to the receiving port of the opposite device and vice versa.

Chapter 2 Specification and Dimension

2.1 Device hardware description

ISCOM2924GF Ethernet Switch is a layer-2 Ethernet switch designed for network users' access to the carriers' network. ISCOM2924GF provides 20 1000BASE-X Ethernet interfaces in the form of SFP and 4 combo interfaces (in support of both 1000BASE-X in the form of SFP and 10/100/1000BASE-T in the form of RJ-45). The power consumption of the system is less than 40W.

2.2 Device dimension

The dimension of ISCOM2924GF switch's main structure is: 1U (Height) x 440mm (Width) x 360mm (Depth). The device weighs 5.5kg and can be either fixed into a 19-inch cabinet or placed on a table.

2.3 Device operating environment

Environment temperature: 0°C ~ 40°C

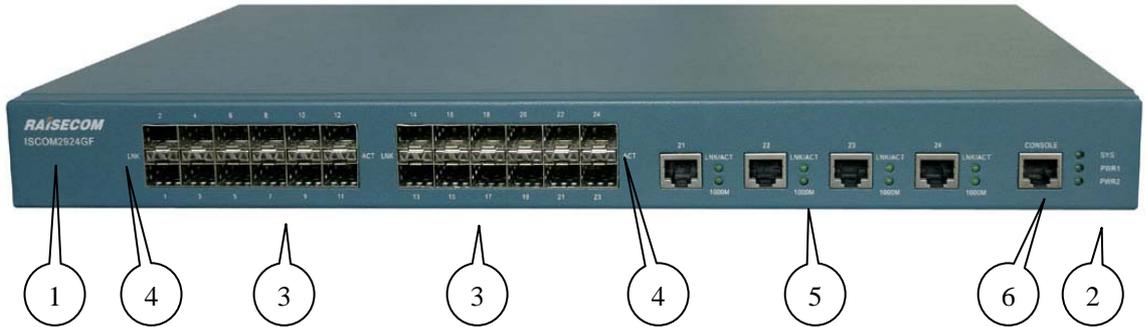
Storage temperature: - 40°C ~ 60°C

Environment humidity: 10% ~ 90%

Chapter 3 Device Appearance

3.1 Device front panel description

20 SFP interfaces, 4 combo interfaces, 1 CONSOLE interface and dozens of status indicators are placed on the front panel of ISCOM2924GF switch (see the figure below).



In the figure shown above:

- ① The logo and model of the switch are RAISECOM and ISCOM2924GF respectively.
- ② 3 device status indicators: SYS, PWR1 and PWR2.

Indicator	Color	Status	Description
SYS	Green	Flickering	The system is operating in order.
		Other Status	Software fault or the system is initializing after electrifying.
PWR1	Green	ON	The power supply module on the left is electrified.
		OFF	The power supply module on the left is not electrified, or fault occurs on the power supply.
PWR2	Green	ON	The power supply module on the right is electrified.
		OFF	The power supply module on the right is not electrified, or fault occurs on the power supply.

- ③ 24 Ethernet interfaces numbered 1 ~ 24. (20 ~ 24 are combo interfaces including both SFP and RJ-45 interfaces).
- ④ 24 groups of indicators for the 24 SFP Ethernet interfaces (including 20 independent SFP and the 4 SFP in the combo interfaces). There are 2 indicators of each SFP interface: LNK and ACT.

Indicator	Color	Status	Description
LNK	Green	ON	The corresponding port is in 1000BASE-X Link Up status.
		OFF	The corresponding port is in 1000BASE-X Link Down status.
ACT	Green	Flickering	The corresponding port is transmitting or receiving data in 1000BASE-X status.
		OFF	No data transmitting or receiving at the corresponding port that is in 1000BASE-X status.

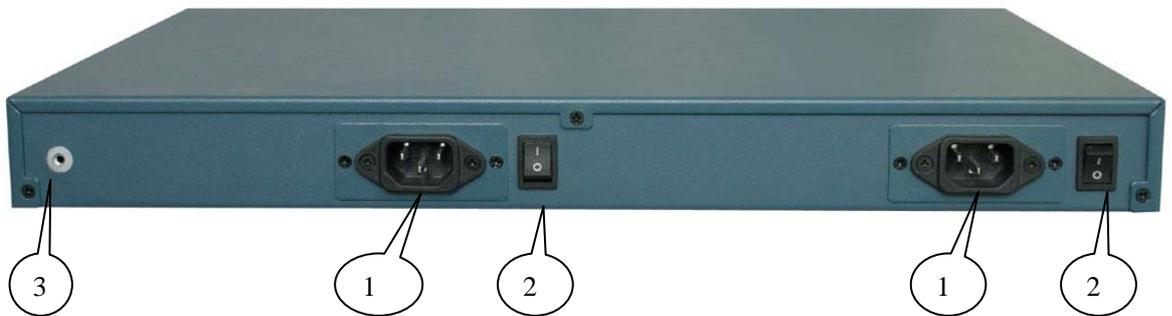
⑤ The status indicators for the 4 RJ-45 electrical interfaces in the 4 combo interface: LNK/ACK and 1000M.

Indicator	Color	Status	Description
LNK/ACT	Green	ON	The port is in Link Up status.
		Flickering	The port is transmitting or receiving data.
		OFF	The port is in Link Down status.
1000M	Green	ON	The electrical interfaces is working at the rate of 1000Mbps in Link Up status
		OFF	The electrical interface is working at the rate of 10Mbps or 100Mbps in Link Up status.

⑥ The CONSOLE interface.

3.2 Device rear panel description

ISCOM2924GF's rear panel is shown in the figure below.



In the figure shown above:

① Socket for power supply (Can be socket for 100~240V AC power supply or -48V DC power

supply according to the configuration.)

- ② Switch for the power supply
- ③ Device grounding terminal

Chapter 4 Installation and Application

4.1 Device model

The device models currently provided are:

Product Model	Description
ISCOM2924GF-AC/S	Single AC power supply
ISCOM2924GF-DC/S	Single DC power supply
ISCOM2924GF-AC/D	Double AC power supply
ISCOM2924GF-DC/D	Double DC power supply

4.2 Device installation

4.2.1 Environment requirement

There are heat exhaust outlets on both sides of ISCOM2924GF switch. Please leave space on both sides of the switch to keep air flow unblocked. Please make sure the outlets are not blocked.

4.2.2 Install the device on to a rack

To set the switch firmly into a rack, please fix the installation tray to the switch using the eleven screws come with the device and fasten the installation handle on to the rack.

4.2.3 Grounding

To ensure the safety of the device and the operator, please make sure that the grounding terminal is well connected to the earth.

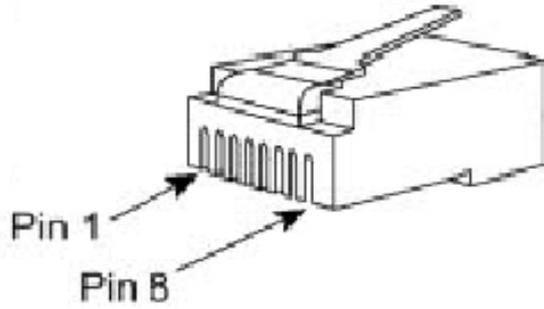
4.3 The connection of the switch

4.3.1 Connect to console

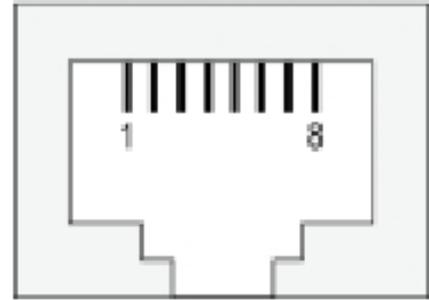
ISCOM2924GF switch provides a RS-232 interface in the form of RJ-45 as the CONSOLE interface. After connecting the CONSOLE interface of ISCOM2924GF switch to the serial port on the PC using the provided cable, users can configure and manage the switch through PC.

1) CONSOLE interface signal definitions of the switch

The CONSOLE interface of ISCOM2924GF is in the form of RJ-45. The RJ-45 connector and jack and the corresponding pin number is shown in the figure below.



RJ-45 Connector



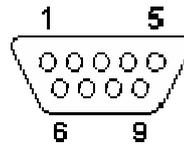
RJ-45 Jack

The corresponding pin function definition of ISCOM2924GF CONSOLE interface is shown in the table below:

Pin Number	Function	Type
3	RxD	IN
6	TxD	OUT
4, 5	GND	Ground
1, 2, 7, 8	N.C.	

2) PC serial port signal definition

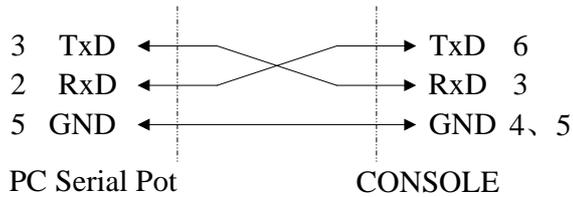
The pin number and pin function definition of 9-pin serial port connector is shown in the figure and table below.



Pin Number	Function	Type	Pin Number	Function	Type
1	CD		6	DSR	
2	RxD	IN	7	RTS	
3	TxD	OUT	8	CTS	
4	DTR		9	RI	
5	GND				

3) CONSOLE interface connecting pattern and parameter setup

The connecting of ISCOM2924GF CONSOLE interface and PC serial port is shown in the figure below.



The values of the connecting parameters of the terminal simulation program on the PC are as follows:

- ✓ Baud Rate: 9600
- ✓ Data Bit: 8
- ✓ Stop Bit: 1
- ✓ Parity Bit: None
- ✓ Flow Control: None

4.3.2 Connect to Ethernet

ISCOM2924GF switch provides 20 1000BASE-X Ethernet interfaces in the form of SFP and 4 combo interfaces. The auto-adaptation function of all the interfaces is enabled by default.

The 4 Ethernet electrical interfaces in the 4 combo interfaces of ISCOM2924GF switch have Auto MDI/MDIX function. The interface can switch between MDI and MDIX automatically. The connection can be established successfully regardless of the type of interface (MDI or MDIX) the opposite site of the connection adopts or the type of cable (straight through or crossover) applied.

For RJ-45, the definition of MDI and MDIX signal is shown in the table below. For the pin numbering of RJ-45 connector and jack, please refer to the “CONSOLE interface signal definitions of the switch” in section 4.3.1.

Pin Number	1000M		100M	
	MDI	MDIX	MDI	MDIX
1	DA+	DB+	TX+	RX+
2	DA-	DB-	TX-	RX-
3	DB+	DB-	RX+	TX+
4	DC+	DD+	NC	NC
5	DC-	DD-	NC	NC
6	DB-	DA-	RX-	TX-
7	DD+	DC+	NC	NC
8	DD-	DC-	NC	NC

The Ethernet electrical interfaces of ISCOM2924GF switch works at MDIX mode when the auto-adaptation function is disabled. In this circumstance, the interface can be connected to an

opposite PC with MDI interface by straight through cable.

4.3.3 Connect to the power supply

ISCOM2924GF-AC adopts 100~240V AC power supply. Please connect the socket on the rear panel of the switch with 100~240V AC power supply using the provided power supply cable.

ISCOM2924GF-DC adopts -48V DC power supply. Please connect the socket on the rear panel of the switch with -48V DC power supply using the provided power supply cable.

4.4 Cable making

For the pin numbering of RJ-45 connector and jack, please refer to the “CONSOLE interface signal definitions of the switch” in section 4.3.1.

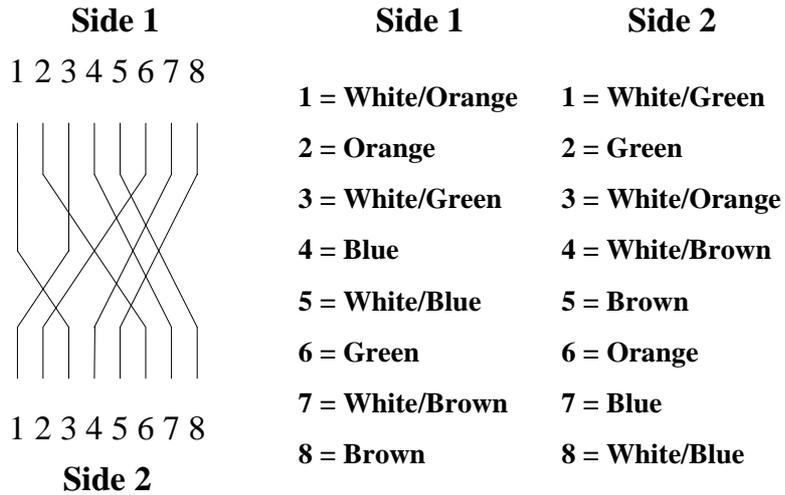
- 1) Straight through cable (The straight through cable for 100M or 1000M are identical.)



- 2) 100M Crossover cable



- 3) 1000M Crossover cable



4.5 Electrify the switch

- After installing the switch following the steps above, connect the switch to 100~240V AC power supply (or -48 DC power supply) using the provided power supply cable, and then the switch is electrified.
- After the electrifying, the indicator PWR will turn ON to indicate that the power supply of the system is working.
- The switch will begin its self-check and initialization in succession. All the indicators on the front panel of the switch will turn ON during this procedure.
- The switch will be in operating status after the self-check and initialization. The indicator SYS will begin to flicker to indicate that the system in operating normally. The indicators for Ethernet ports will show the status of their corresponding ports (ON or OFF according to the settings and connection of the port).
- Here, if the switch is connected to PC via CONSOLE interface before electrifying and the terminal software is correctly configured, the user management interface on which users can operate over the switch will appear on the PC (For details, please refer to the corresponding software configuration manual.).

Chapter 5 Notes

The installation, maintenance, plugging in and pulling out of components of ISCOM2924GF switch can only be conducted by qualified technical support staff. Please place the device in a temperature-controllable and humidity-controllable room and please be cautious of the conductivity of the materials around the device. Please note that a room with high humidity exposes the device to short circuit; while low humidity may lead to fire alarm. In a word, the switch must be placed in proper surroundings.

- The power supply of the device should be well earthed to let out the static electricity.
- Please keep some space from other powered devices when installing the switch.
- The cable arrangement of the switch should have all cables be placed across the live wire. Long-distance close parallel of the cables and the live wire must be avoided.
- Please operate following the instructions in this manual strictly.
- Please avoid operating the switch with wet hands or hands with too much sweat.
- Any mechanical and electrical modifications to the switch are strictly forbidden.



北京瑞斯康达科技发展有限公司
RAISECOM TECHNOLOGY CO.,LTD.

Address: 2nd Floor, South Building of Rainbow Plaza, No.11 Shangdi Information Road,
Haidian District, Beijing Postcode: 100085 Tel: +86-10-82883305 Fax: +86-10-82883056
Email: export@raisecom.com <http://www.raisecom.com>